
Program Layout and Design

The Emery Grover Building has approximately 17,670 nsf of space on three floors and 4,200 nsf on the attic level. Using the March 2010 program developed from the previous site feasibility study, the Senior Center could occupy the existing building as follows:

Lower Level Art and Fitness Studios, Administrative and Support Spaces

Main Level Program and Administrative Spaces

Upper Level Large Multi-Purpose Room and Kitchen

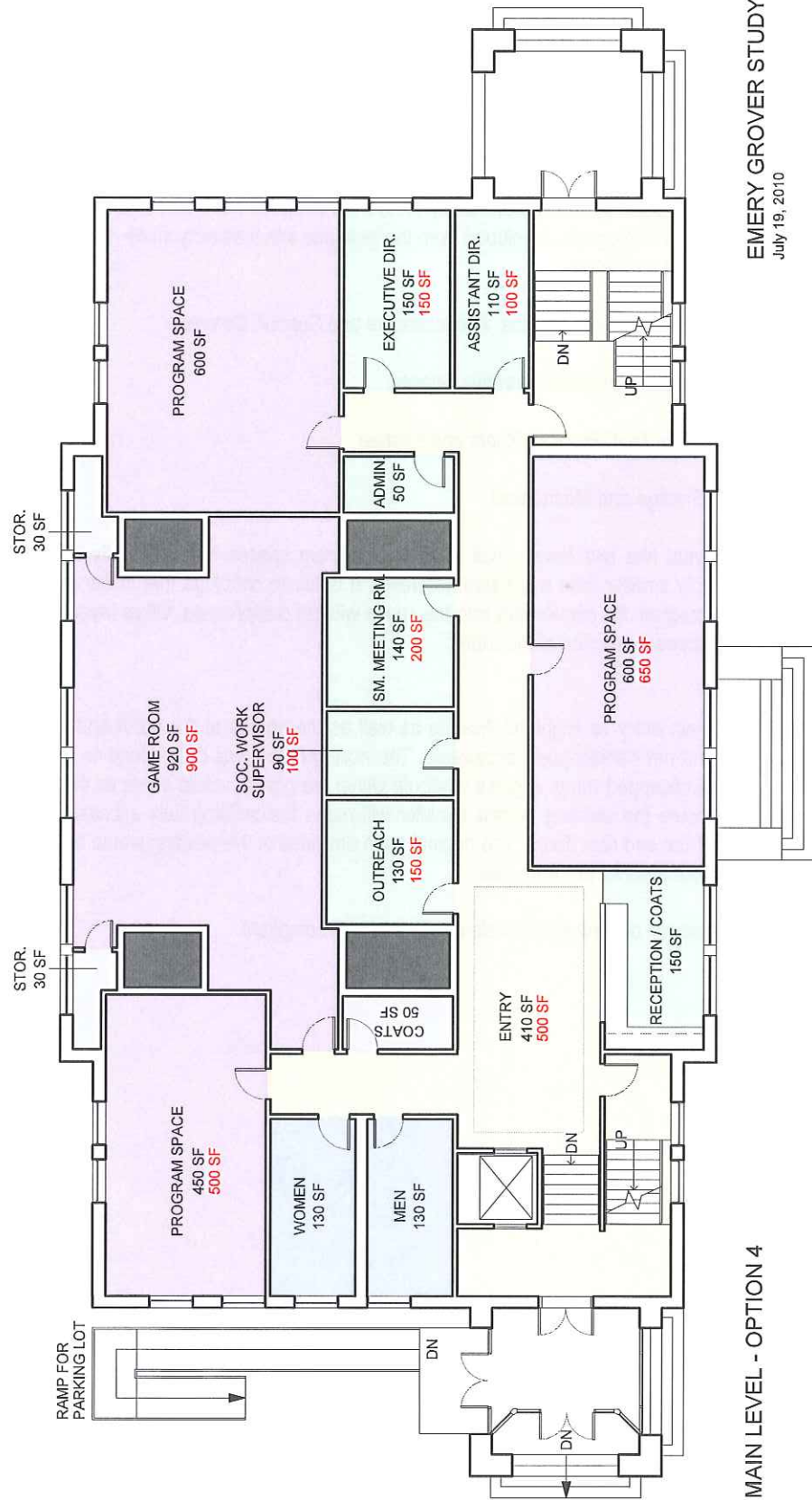
Attic Level Storage and Mechanical

The chosen layout has two fewer small multi-use program spaces than originally requested and some of the rooms are slightly smaller than requested. However, it is fair to conclude that in our opinion, the essence of the Senior Center program fits comfortably into the space without compromise. Other layouts generated for review are located in the Appendix section of the report.

ACCESSIBILITY

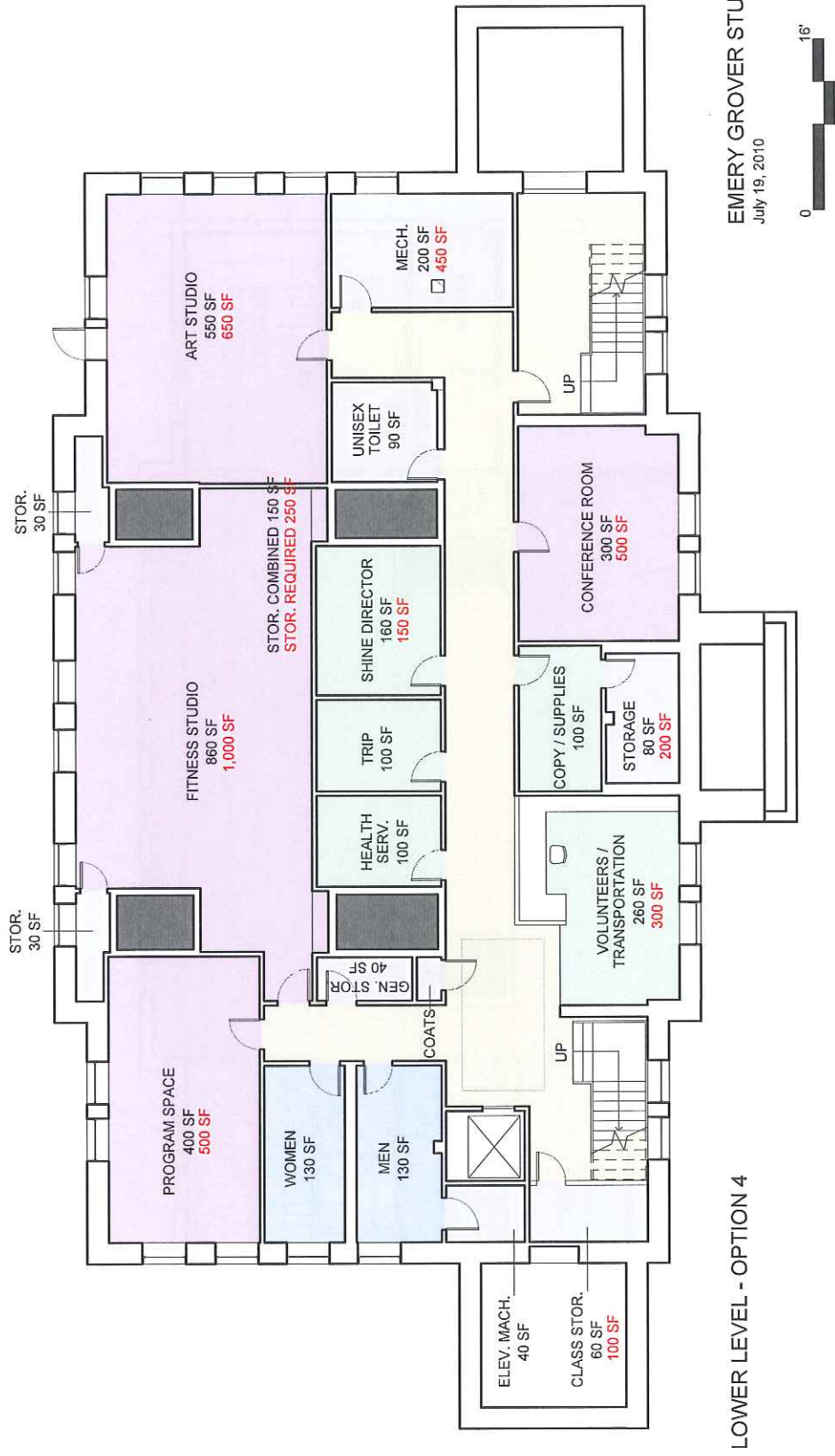
Currently the main entry on Highland Avenue as well as the entries at the north and south porticos are situated above grade and not handicapped accessible. The north portico was determined to be the best location for the addition of a handicapped ramp. A glass vestibule within the portico would serve as the main entry into the senior center. Once inside the building, a new elevator will make the building fully accessible. The elevator would be oversized with front and rear doors. The original main entrance of the building would be closed off and modified to recapture the floor area for program use.

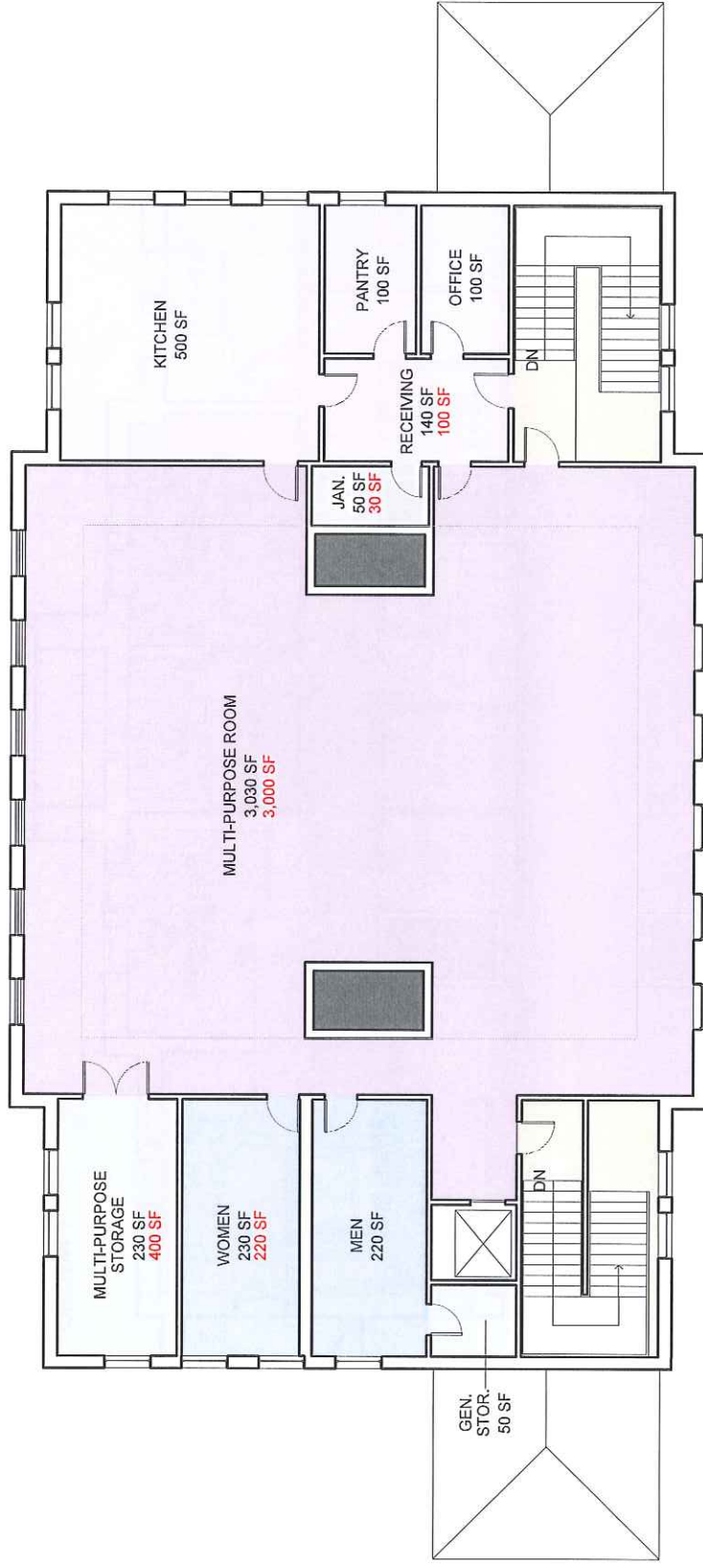
All the bathrooms will be new and therefore will be MAAB compliant.



EMERY GROVER STUDY
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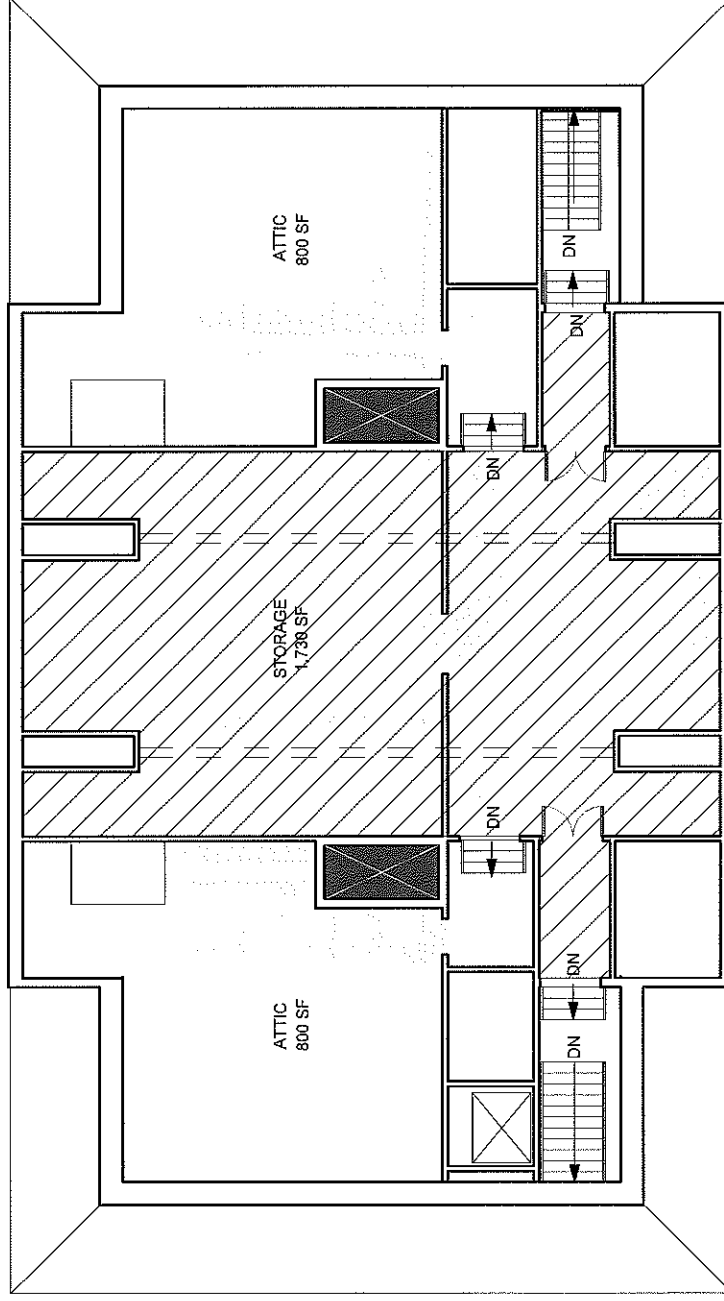




UPPER LEVEL - OPTION 4

EMERY GROVER STUDY
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ATTIC LEVEL

EMERY GROVER STUDY
July 19, 2010



Program Analysis

	March 2010 Program	Lower Level	Main Level	Upper Level	Attic level	Provided Area
Lobby/Reception						
Lobby / Reception / Waiting	500		410			
Open Storage for Coats	90		60			
Subtotal	590					470
Administrative Offices						
Reception	100		190			
Executive Director	150		150			
Associate Director	100		100			
Volunteer / Transportation Coord.	100	100				
Trip Coord. / Reception, etc.	65	100				
Social Work Supervisor	100		90			
Outreach and Social Workers (2)	150		140			
General Staff						
Part time admin. Assistant	65		30			
Volunteer desks (2) & table	200	130				
SHINE Director	150	150				
SHINE volunteer	100					
Small Meeting Room / Counseling	200		140			
Health / Other Services	100					
Copy / Supplies	100	100				
Coal Closet	10	20				
Subtotal	1,690					1,440
Program Spaces						
Boutique / Gift Shop	100					
Multi Purpose Room	3,000			3,000		
Multi-Purpose Room Storage	400			250		
Multi-Purpose Anteroom	nr					
Lounge / Library	500					
Large Game Area	900		900			
Game Room Storage	70		80			
Program Space: Fitness Studio	1,000	900				
Program Space: Computers	500		450			
Program Space: Art Studio	650	550				
Program Space	650		600			
Program Space	500		600			
Program Space	500	400				
Program Space	500					
Program Room Storage	100	80				
Conference (20)	400	300				
Library/Media Room	900					
Subtotal	10,070					8,110
Food Service						
Kitchen	500			500		
Office	100			100		
Pantry Storage	100			100		
Loading / Receiving	100			140		
Subtotal	800					840
Restrooms						
Women's (on two floors)	400	130	130	230		
Men's (on two floors)	400	130	130	220		
Companion Unisex Toilet	60	90				
Subtotal	860					1,060
Support Spaces						
Mechanical / Electrical / Sprinkler	450	200			600	
Health Equipment Storage	250				250	
General Storage, 1st Floor	400				400	
Exterior Maintenance Storage	50					
Miscellaneous Storage	200				200	
Custodian, 1st Floor	40	60				
Custodian, additional floors	30			50		
Elevator	200	100	100	100		
Elevator Machine	100	50				
General Storage, additional floors	50	50				
Fire Stairs (two stairs, two levels)	600	300	300	300	300	
Subtotal	2,370					3,360
Total Net Square Feet						
	16,380	3,940	4,600	4,990	1,750	15,280
Grossing Factor						
	1.20					
Total Building Area Required (GSF)						
	19,656					
Total Building Area Available (GSF)						
						21,840
					Lower Level	5,890
					Main Level	5,780
					North and South Portico (not included above)	620
					Upper Level	5,780
					Attic	4,300

Site Data Matrix

Data Category		Emery Grover
0 Zoning & Dimensional Data		
	District	Apartment A-1
	flood plain district	no
	aquifer protection district	no
	allowed use	yes
Dimensional Restrictions		
	front yard setback (4.2.1 a)	35 ft
	rear yard setback (4.2.1 d)	25 ft
	side yard setback (4.2.1 c)	25 ft
	site area	46,155 sf ¹
	FAR limitations (4.3.1)	0.5
	allowable buildable area	23,078 sf
	existing area (includes 4,390 sf attic)	22,460 sf
	buildable area for <u>new</u> senior center	20,000 sf
	allowable lot coverage (4.2.1 f)	15% max
	maximum allowable lot coverage	6,923 sf
	existing building lot coverage	6,400 sf (include portico area)
	lot coverage for new building	10,000 sf per floor for a two story structure is desired. This exceeds the allowable coverage area although a three story structure would be allowable within the by-laws. A zoning change would be required for the two story building if a hardship variance could not be obtained.
	footprint available for expansion to existing	618 sf
	max stories (4.2.2)	3 stories
	max building height (4.2.2)	40 ft
	other buildings allowed on site	no
	other buildings on site	no (complies)

¹ Site area of 46,990 sf is measured from Town GIS map; 46,155 sf is listed on Town zoning map and 40,856 sf is listed by the Assessor's office. 46,155 sf is assumed to include the easement area of 4,852 sf shown on the Assessor's map.

0 Zoning & Dimensional Data (cont.)		
Parking Requirements		
	handicapped parking required	5
	size of spaces	9 ft x 18.5 ft
	parking set back requirements	10 ft (front) 4 ft (rear & side)
	parking green space requirements	planted 10% landscaped area 25% landscaped area within interior of parking area 1 tree per 10 parking 40 sf per tree
	Bicycle Rack	1 bicycle storage per 20 parking spaces (4 required)
	off street loading requirement	required
1 Natural Site Conditions		
	Available Soil Report	no
	Soil Conditions	no premium
	Water Table	not known, but there was no visible evidence of moisture at existing lower level
	Topography	0 to 15% slope, driveway slopes up from Highland Ave
	Vegetation	None
	Orientation, N-S-E-W	Building faces west
2 Environmental Issues: Conservation		
	Flood Considerations	No
	Wetlands	No
	River or "Water Body" Setbacks	No
	Vernal Pools	No
3 Environmental HAZMAT		
	Sub-Surface Soil Contamination	not known; an allowance is carried in the estimate for potential soil remediation when the oil tank is removed
	Building Asbestos	Interior abated August 2010
	Building Lead Paint	Exterior abated 2009 Interior not known
	Exterior Caulking or Window Putty Containing Asbestos	Not known but it is assumed that the existing windows will have asbestos containing putty that will be abated with the repair work
	Others	One 1,050 gallon in ground oil tank

4 Permitting		
	Town Meeting Vote for Zoning Change	No for renovation, Yes for new structure assuming that a two story building was desired. If a three story building is to be constructed then the project will comply with the by-laws as is.
	Environmental Impact Statement	not required
	Planning Board Required	yes, for both existing and new building
	Conservation Commission Required	no
	Permitting Surcharge in design fees	no
5 Site Access		
	Major street access is from	Highland and Oakland Avenues
	Vehicular to Parking	Vehicular access within the parking lot to the parking space is organized and clear.
	Entry and Exit from Site	Site access from Oakland Avenue is good. Access from or to Highland Avenue when turning right is good. Access from or to Highland Avenue when turning left requires crossing traffic which is undesirable, difficult and potentially hazardous given the volume of traffic on Highland Avenue. The option of excluding left hand turns should be studied during the next phase. The option of keeping both curb cuts on Highland Avenue may also warrant study to decrease crossing opportunities.
	Off-Street Loading & Service provision	passable (use south vestibule with renovation)
	Construction Vehicle Access	good
	Contractor Parking	Fair (some parking may be available on site after lay down areas are established)
	Pedestrian Access	Yes, good
	Bicycle Access	Yes, good from Oakland Avenue side of the site
	Bus/Van Drop Off	Yes, feasible using either Highland Avenue entry and exit or Oakland Street
	Public Transportation	yes
	Auxiliary transportation required	no
6 Emergency Vehicle Access		
	Police Department response time	1 min
	Police Department patrol	good
	Fire Department response time	1.5 min
	Fire Department Access requirements	good

7 Parking		
	projected <u>total</u> parking need at site	100
	existing parking available at site	<p>72 spaces are located on the lot with the existing building and will remain</p> <p>10 on-street spaces are within 100 ft of the building and could be dedicated as the spaces on Pickering Street currently are.</p> <p>17 spaces currently at the Stephen Palmer House could be used for staff parking. (This has to be confirmed and will be dependent upon Town uses the current Senior Center space.) This represents a potential total of 99 spaces.</p> <p>With the new construction option, 65 spaces are available on site unless the building is raised above the parking level. This is considered undesirable both aesthetically and functionally for a senior center although it results in 100 spaces on site.</p>
	new on-grade parking available & feasible	Existing lot maximized with existing building. Additional parking would require garage; for new option, raising the building allows for continuous parking below at grade
	<u>number</u> of off street parking provided	72 spaces using existing lot; new construction would have 100 cars on lot
	Structured Parking Required	to meet parking requirement yes but structure is undesirable and cost prohibitive
	handicapped parking provided	5
	Expansion capability	no (except for garage)
	Shared uses, Alternate parking sources	Town has 17 spaces at Stephen Palmer House that could possibly be used for overflow use (consider swapping existing SC spaces with spaces in SPH lot fronting on May Street)
8 Utility Connections		
	Storm Drainage	yes
	Gas	at site
	Water	at site
	Sewer	at site
	Electric, Telephone, Data & Cable	at site
9 Capacity for Expansion		
	area available for expansion	Expansion space on East face would be limited to first and second levels so as to maintain existing parking lot. Site coverage restrictions limit the size of any such additions.
	quantify area	<p>523 available within lot coverage limitations.</p> <p>618 available within FAR limitations.</p>
	impact of expansion on traffic	no impact, building is used by same volume of traffic today
	impact of expansion on parking	no impact on parking as the additions would be raised above

		parking lot
	impact on system requirements	acceptable given that all systems in the building will be new
10 Abutting Properties		
	Impact on Abutters	not significant given current use of the building and existing traffic
11 Adjacencies/Neighbors		
	Neighborhood Context	Mixed Use: residential, commercial across Highland Avenue, Church and School
	List Adjacent Uses	Residential (north & east) Church/School (south), Funeral (west)
	Conflicting Adjacent Uses	Residential traffic from Highland Court accessing on Easement area appears to be minimal but is a conflict. Traffic can be heavy due to activities at funeral homes across Highland Avenue. School traffic for afternoon student pick-up creates traffic congestion.
	Negative impact on Landscape	none
	Adjacent Proposed Construction	no
12 Impact on Existing Use		
	Impact of SC on existing use	neutral
13 Impact on Existing Buildings		
		neutral
14 Possibility for Shared Use		
		yes
15 Location		
	Proximity to Town Center / Downtown	yes
	Proximity to outdoor rec spaces	Greene's Field is within 5 minutes of this site
	Unique characteristics of location	Yes: National Historic Structure is unique
	Travel distances	Site located in town center minimizes travel distances
16 View Corridors		
	impact on view corridors	neutral, no change from existing with renovated scheme; minimal change with the new building alternative which occupies the existing building footprint
17 Constructability		
	construction staging	sufficient area available on site
	construction vehicle access	acceptable
	disruption of adjacent uses	yes for residents using easement to access development to the north
	note observed construction cost surcharge	new scheme would require expensive demolition and filling of grade for lower level

18 Single Level or Multi Level		
		3 story for existing and 2 or 3 story for new building alternative
19 Other Outdoor Activities		
		yes
20 Intergenerational Activities		
	Teen Volunteers	The site is close to the high school to enable volunteer programs
	Rec Department	N/A
21 Operational Considerations		
		multiple floor levels (3) are not as desirable as a one or two story building but workable; The three story renovated building will require placement of SC staff offices on each floor level to enhance safety and security; dumbwaiter required for deliveries and trash removal to kitchen space
22 Sustainability		
	Reduction in automobile use	yes, center of town location will likely reduce car use
	feasibility of solar	yes
	feasibility of wind	no
	rainwater reuse	yes
	geothermal	yes
	Significant Stormwater Impact	no
	Adaptive reuse	yes for renovated scheme, no for all new scheme
	LEED certification feasible	yes

Structural Review

Refer to Existing Plans and Exterior Elevations marked up with our site observations following this narrative, along with our preliminary chapter 34 evaluation information. Text in bold represents our recommended scope of work.

ROOF FRAMING

Not all attic framing was visible during Structures North's site visit. Snow guards were observed on the east and west sides of the building. It is assumed that the guards were not a part of original construction, and it is unknown whether the roof was evaluated or is capable of supporting the additional snow loads caused by snow guards. **The roof might need a full evaluation, and if found to be undersized, reinforcing and/or additional columns installed.**

ATTIC FLOOR FRAMING

Not all attic framing was visible during Structures North's site visit. Joists and beams that we were able to observe typically had mortise and tenon connections when supported by other wood beams. The tenons were relatively small, likely only one or two inches tall. At several locations, horizontal splits in the supported framing were observed originating at an edge of tenon and extending several feet along the length of the member. Joists often had a small (1/4" to 3/8"+/-) gap between their ends and the supported member. Light gage metal joist and beam hangers, such as Simpson face mount hangers, should be installed throughout the building (all floors) at mortise and tenon connections.

The two trusses, which are the full height of the attic to roof space, and which appear to clear span the building in the east-west direction, would need further evaluation. We suspect that under a modern code analysis they would be considered overstressed and either need reinforcing or additional framing systems added to lessen the load the trusses take. **Given the general open space layouts of the proposed rooms below the trusses, we suspect the more expensive truss reinforcing option would be required to prevent new framing from interfering with the occupancies below.**

Our preliminary calculations indicate that at the center of the building, where attic joists span approximately 18.5 feet, they have an approximately 60psf live load capacity, which would be suitable for offices (without partitions), or residential occupancy. At the south and north ends of the buildings, where the spans are approximately 22 feet, the joists have only an approximately 30psf live load capacity, which is not suitable for occupancy. **We would anticipate that in order to use the attic, ALL joists would need to be sistered, and/or new beams and columns introduced to shorten existing joist spans.**

2ND FLOOR

Wall, floor, and ceiling surfaces were typically covered with finishes, obscuring framing, during our site visit. There were some walls that appeared to have older (original) plaster finishes that were cracked, as noted on the plans. These walls may need further investigation once finishes are removed. It is uncertain at this point if the cracks were caused by foundation settlement, temperature and moisture shrink/swell effects, or by other causes.

We would expect that the walls noted as presumed bearing walls on the attached plans would remain. Further investigation will be required once interior finishes are removed, but **any bearing wall removal would require new post and beam replacement framing.** Some of these walls, notably the masonry shaft/chimney walls, might be shear walls. We would expect shear walls to remain, but if any are removed, new lateral load resisting systems would need to be installed in alternative locations, especially in the east-west direction. Given the rigidity of the existing masonry shear walls (including exterior walls), **any replacement lateral load resisting systems would ideally be masonry also.** Using steel braced frames or moment frames would likely be cost prohibitive and/or structurally inefficient due to their lesser rigidity than masonry shear walls. Replacement masonry shear walls would need to stack from floor to floor.

2ND FLOOR FRAMING

Existing framing is unknown because none of the second floor framing was visited during site visit. Based on our assumed bearing wall locations (see attached plans), we are anticipating joists have up to 26 foot spans. Joist sizes and spacing are unknown, but we would expect to see something on the order of 2x12's at 12"o.c. Joists this size and spacing would be more than 100% overstressed under a 100psf assembly live load for a 26 foot span, and would deflect 2.8 inches. This deflection is much more than what we generally consider tolerable. Unless existing beams were found to shorten joists spans, **we would expect the need for new lines of steel beams and columns, down to new footings in the basement, to be required to shorten the joist spans. New footings would require the involvement of a geotechnical engineer's services.** Even if existing beams were found, our experience has been that beams in building this age often are undersized based on modern building code requirements, and they would likely need strengthening or replacement. It was noted that the central space was originally used as an auditorium that served 275+/- people. Based on our limited observations, we would not expect it to allow for use as assembly space without significant reinforcing.

Existing framing condition is unknown. Although current office tenants mentioned leaking roofs, rotted window sills, and animal infiltrations, attic joists appeared to be in acceptable condition where we observed them. We would recommend allowance for possible rot problems where joists bear on masonry, especially at exterior walls. This assumption is especially applicable where we noticed bulges and waviness in exterior walls. **Assume that new PT ledgers will need to be installed, and existing joists fastened to the ledgers, an operation which would require temporary shoring of joists throughout the building.**

1ST FLOOR

We would expect the 1st floor conditions to be similar to the 2nd floor conditions. Please refer to 2nd floor comments.

We would add that lateral loads typically increase in magnitude the lower in the building you are, until you reach exterior grade level. As such, the wide open Multipurpose room shown in option 2 would likely require a considerable amount of new lateral load resisting systems, preferably masonry shear walls, but given the layout shown, possibly a mix of masonry shear walls and braced steel frames. It may be preferable to move the Multipurpose room to the 2nd floor, and allow for more shear walls on the first floor and lower level.

1ST FLOOR FRAMING

We would expect the 1st floor framing to be similar to the 2nd floor framing. Please refer to 2nd floor framing comments.

BASEMENT

We would assume that existing brick walls (noted on the attached plans) are bearing walls, and CMU (also noted on the plans) walls are later infill partitions. As such, **the removal of any brick walls would require new steel beam, column, and footing replacements.**

FOUNDATIONS

A geotechnical engineer's involvement in the project is anticipated. The geotechnical engineer will likely require soil borings and/or test pits. New foundations including the pit required for installation of the elevator, as noted elsewhere in this narrative will be required. New foundation locations will depend on new lower level column, bearing wall, and shear wall locations. The adequacy of existing foundation will need to be further investigated where loads to the foundations are increased of presumed past loads, and potentially new underpinned footings added where existing footings are insufficient for the new loads.

EXTERIOR WALLS

Please refer to our markups of exterior elevations and the corresponding notes.

At the south portico, existing steel reinforcing of the 3 arches was observed. A previous engineer's report noted the need for temporary reinforcing of the arches. Our elevation markups note using similar reinforcing at the north

portico, which is exhibiting serious cracks in the arch. If the steel reinforcing at the south portico was intended to be temporary, then a new reinforcing scheme will need to be developed for both porticos. Assume extensive brick re-setting and repointing at the north portico, along with temporary arch shoring and permanent tension rods at the spring of the arches at all arches in both porticos.

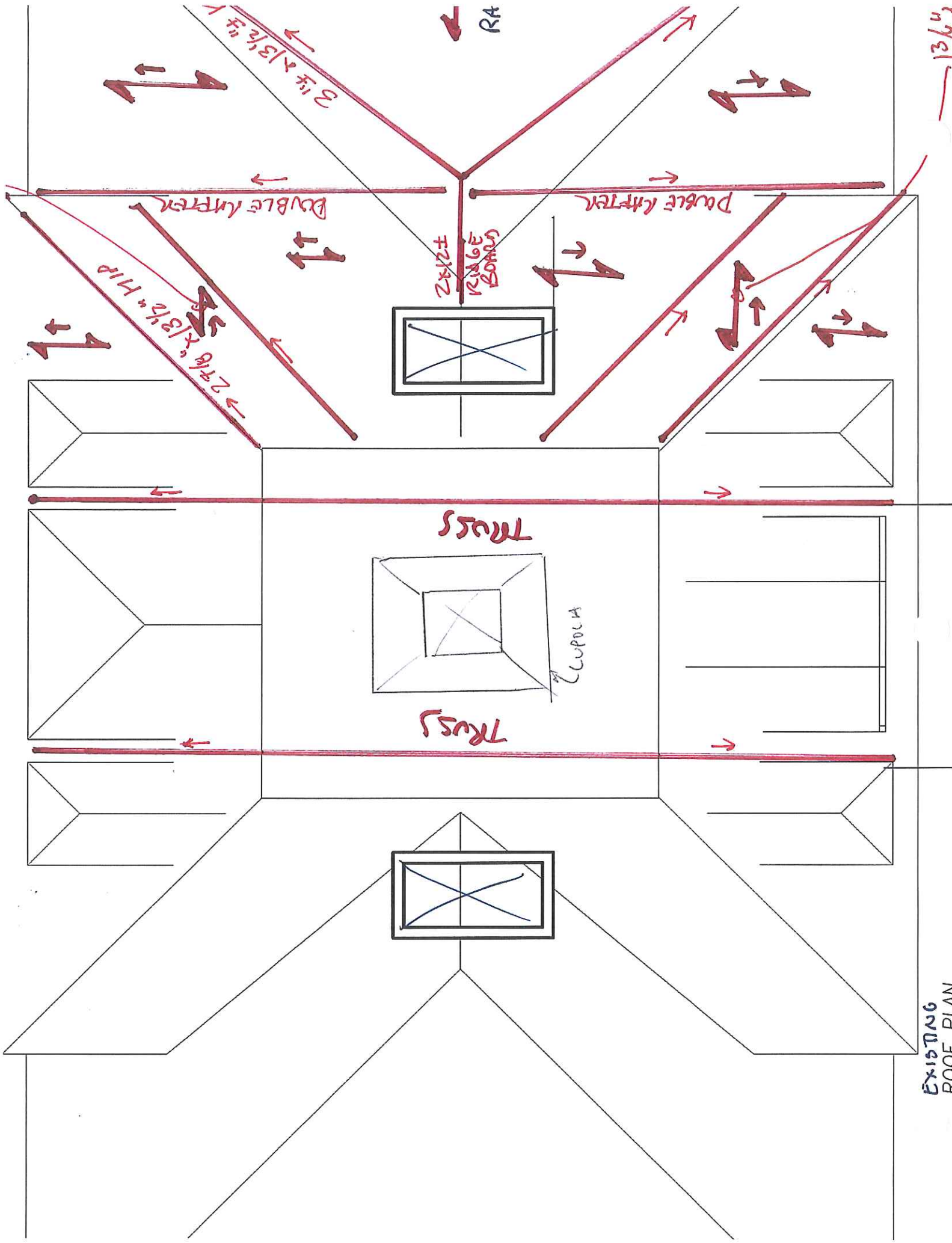
STAIRS & ELEVATORS

The two existing stairs appear to be in need of replacement. New stairs should be installed, and the new stairs should be self-supporting on new footings in the basement, rather than hanging from roof hips as the existing stairs do. (These hangers appear to have been added after original construction, and may be the cause of the ceiling cracks noted on the plans).

A new elevator would require new framing (beams and columns or ledgers with light gage hangers to support existing joists) at each level, and a new elevator pit and footing. Depending on the elevator pit's proximity to existing footings, the existing footings may need underpinning, or the framing above resupported in an alternative manner involving new beams, columns, and footings in order to relocate footings away from the elevator pit.

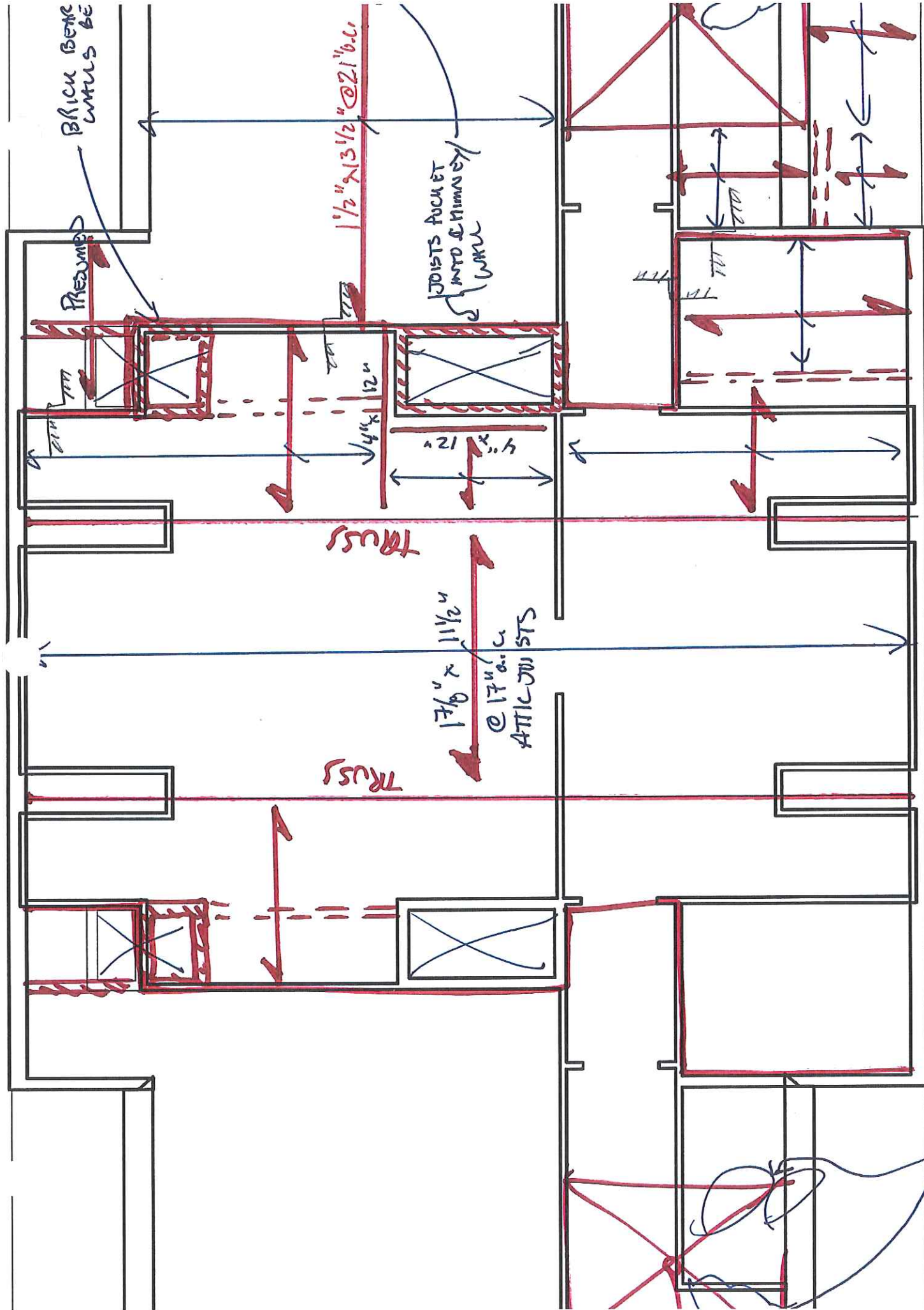
LATERAL LOAD RESISTING SYSTEMS

Refer to the Chapter 34 (state building code) level of work determination table under the Code Analysis section of this report. The table assumes the least anticipated amount of work that may be required. We would recommend designing the renovations such that the existing building remains in level 2.



EXISTING
ROOF PLAN

13 1/2"



EXISTING
ATTIC PLAN

STAGE
BEAM ABOVE

(INTERIOR)
PRESUMED 2ND
FLOOR BEARING
WALLS FOR
ATTIC FRAMING

DROP IN CUG, UNKNOWN
IF MECH/ELECT/STRUCTURAL

SMALL
IN WA

SEE ATTIC PLAN FOR PRESUMED
ATTIC FRAMING

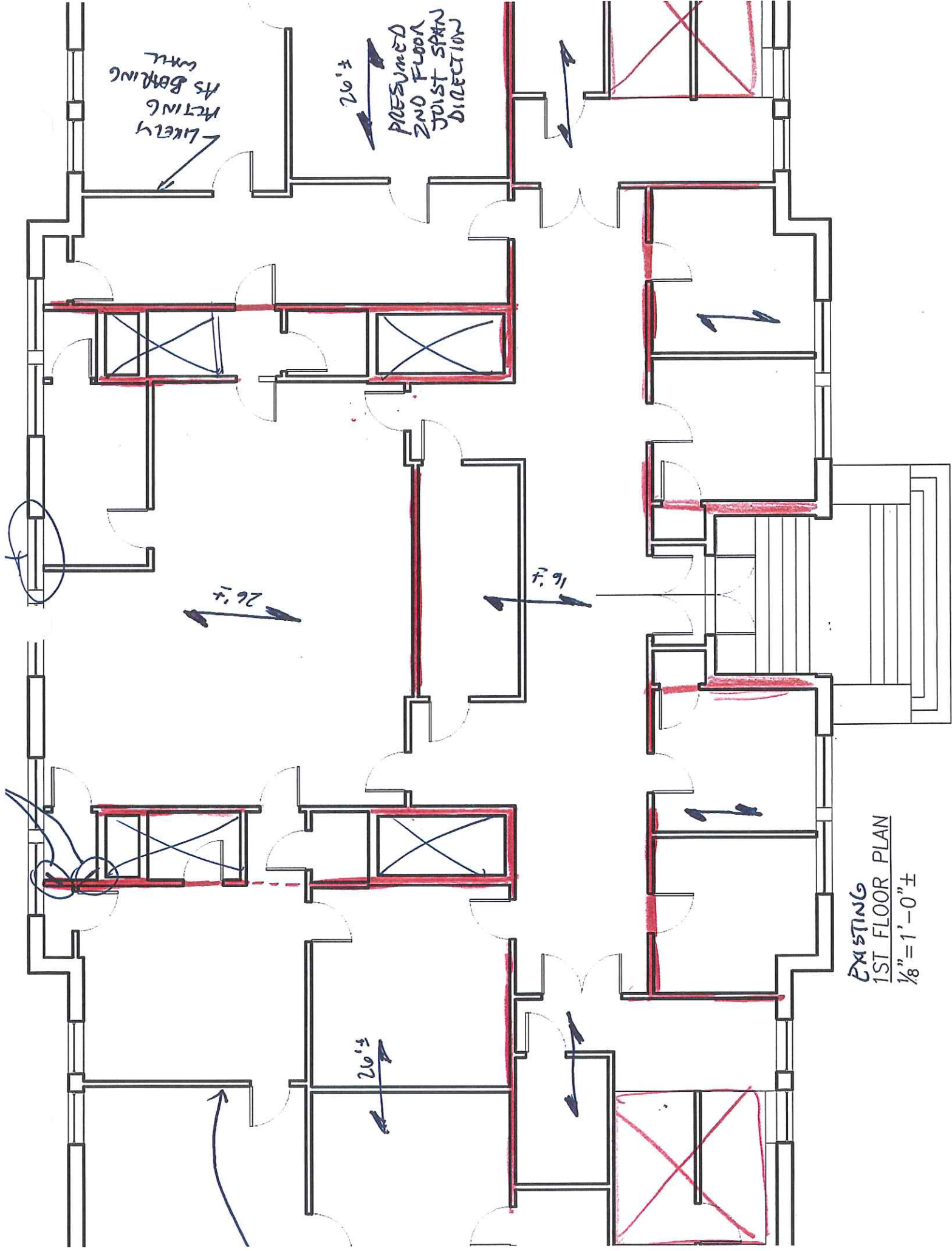
EXISTING
2ND FLOOR PLAN
 $\frac{1}{8}'' = 1' - 0'' \pm$

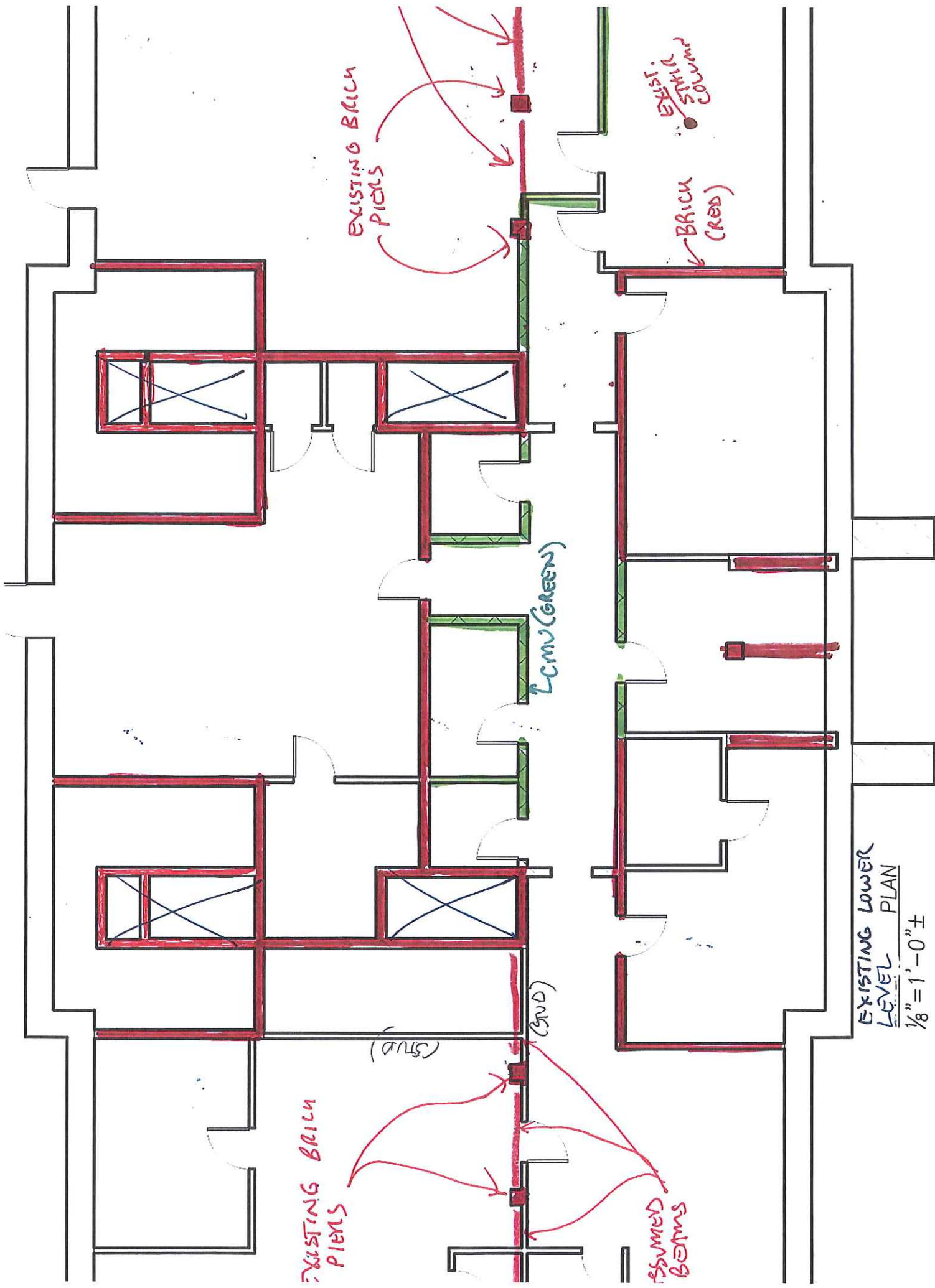
LIKELY
ACTING
AS BEARING
WALL

26'±
PRESUMED
2ND FLOOR
JOIST SPAN
DIRECTION

F. 91

EXISTING
1ST FLOOR PLAN
1/8" = 1'-0"±





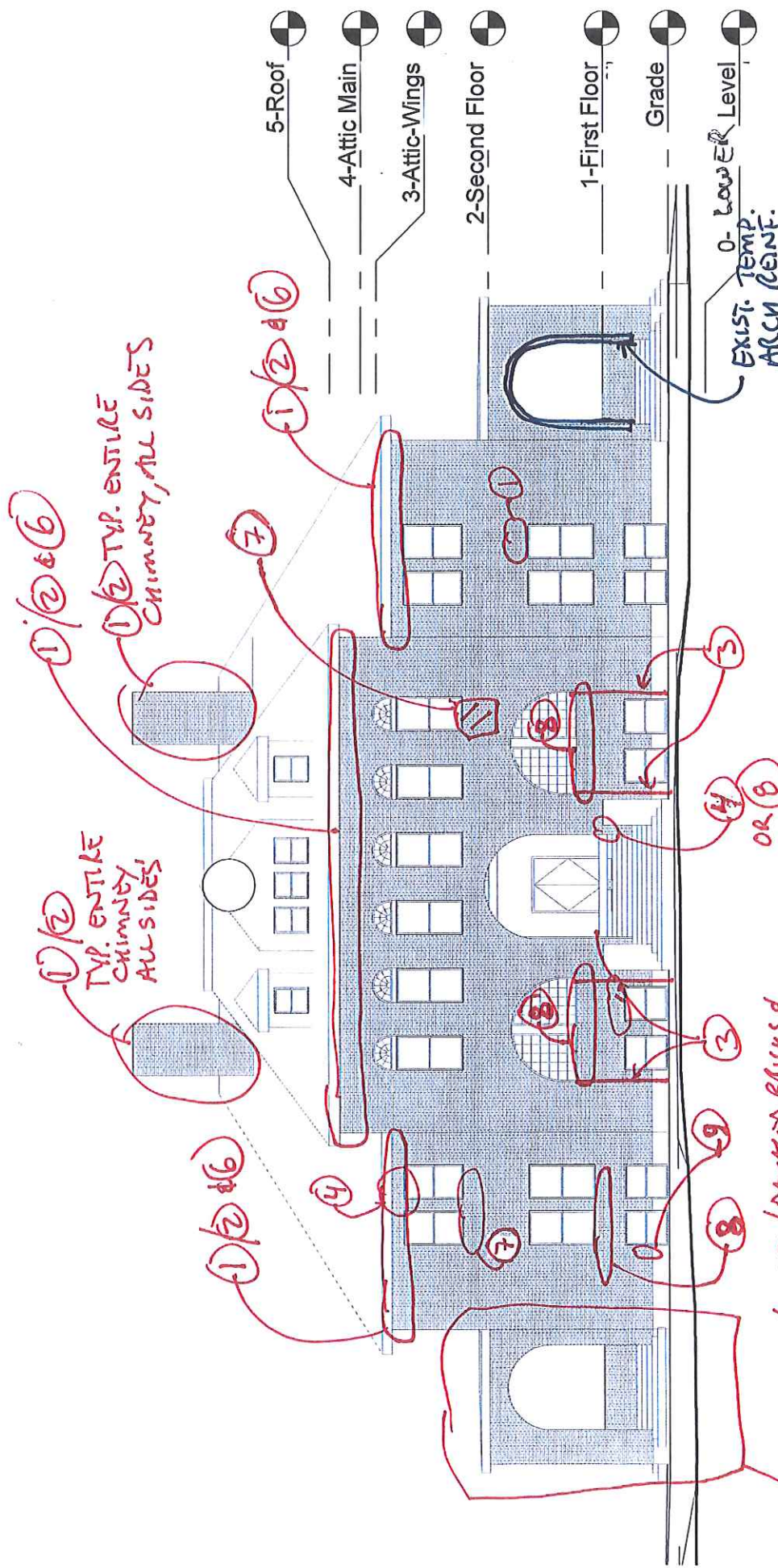
EXISTING LOWER
LEVEL
PLAN
1/8" = 1'-0" ±

Exterior Elevation Notes: Emery Grover Building, Needham, MA

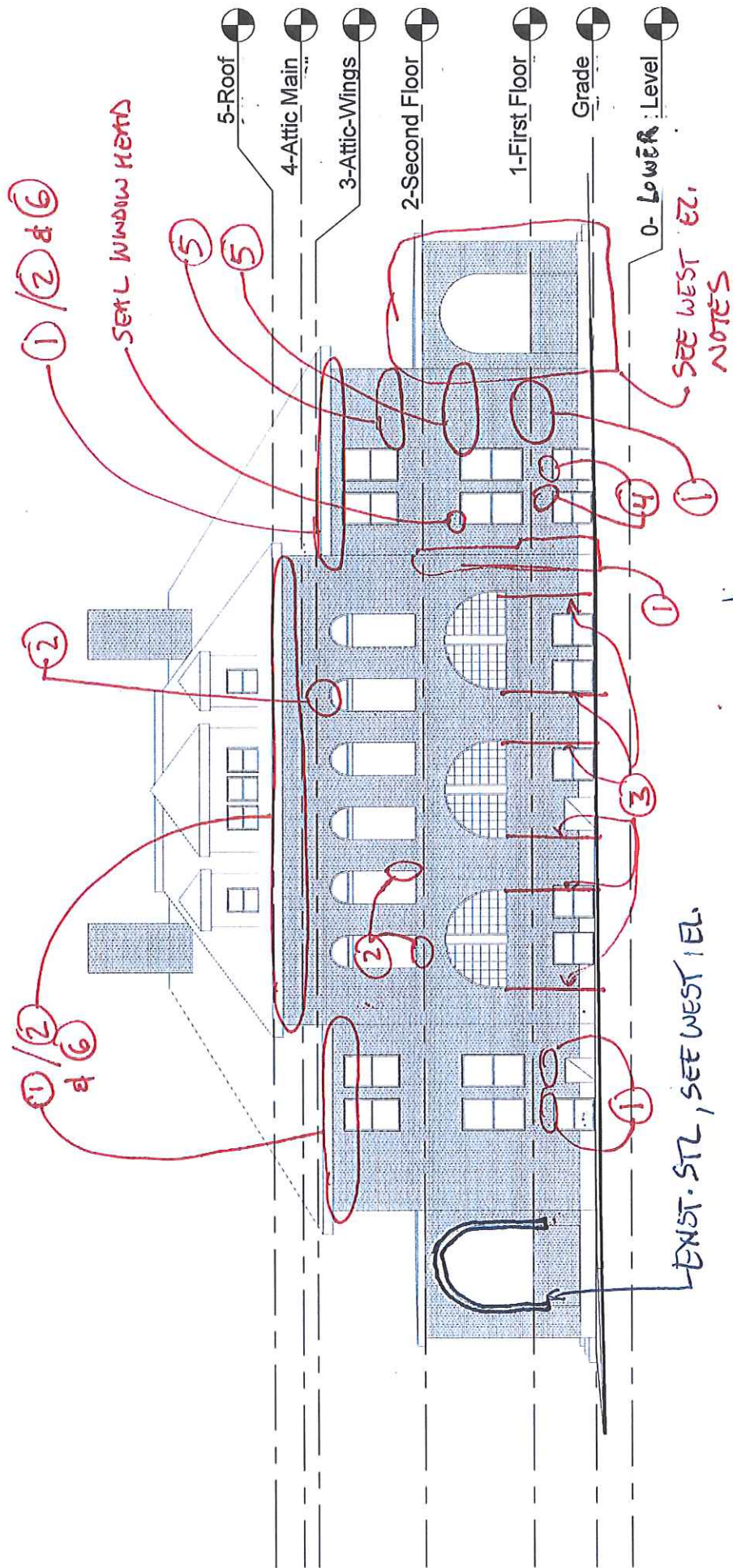
Date: **July 28, 2010**

ALL ELEVATIONS: Investigate existing connection of veneer to backup. Smaller dimensions of veneer brick, combined with likely larger brick dimensions for backup brick, likely resulted in infrequent connection between veneer and backup. Assume pinning of veneer to backup will be required.

- ① Repoint.
- ② Re-set or pin loose or shifted bricks or stone sill.
- ③ Caulk joints.
- ④ Reset, replace, and/or stitch brickwork at cracks or damaged bricks.
- ⑤ Possible localized bow or bulge in wall. Will require further investigation into cause. Assume pinning, brick resetting, and re-detailing of connection of interior framing to exterior wall. A lift inspection should be performed and the masonry sounded out with a hammer.
- ⑥ Further investigation is required to determine whether roof thrust loads or rusting embedded metals are causing brick movement.
- ⑦ Consider flashing under the brick soldier course. Reset bricks. (Water is soaking into joints, combined with no brick weight above this level at windows but brick weight from above on adjacent bricks, causing bricks at this location to bow upward).
- ⑧ Pull bricks out and perform a deep re-packing and resetting of bricks. (Issue with brick that readily absorbs water and swells, in combination with a lack of window drip, in contact with stone sill that does not readily absorb water).
- ⑨ Mortar repair cracks. (Issue of brick moisture growth/swelling alongside a stone foundation that does not expand, leading to friction in the joint between the two differing materials).



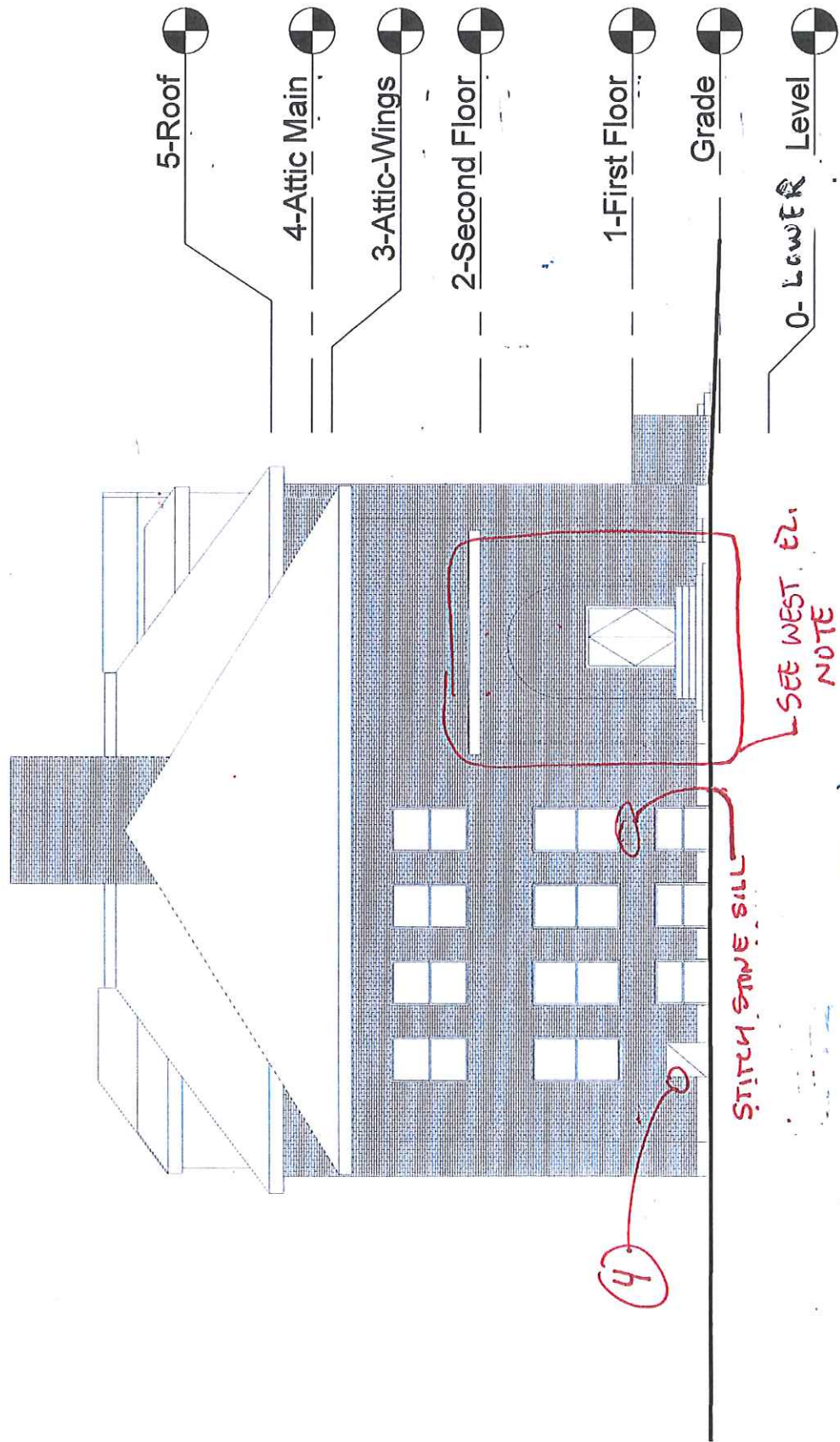
EMERY GLOVER
July 28, 2010



EAST. (REAR) ELEVATION

N.T.S.

EMILY GLOVER
JULY 28, 2010



NORTH ELEVATION

N.T.S.

EMERY GROVER
JULY 28, 2014

